

Public school catering's role in the transition towards a sustainable food system

- Opportunities of serving more legumes and less meat

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- Möjligheter att servera mer baljväxter och mindre kött

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Linnéa Stolt

Supervisor: Fredrik Fernqvist, SLU, Department of Work Science, Business Economics and Environmental Psychology

Examiner: Sara Spendrup, SLU, Department of Work Science, Business Economics and Environmental Psychology

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SLU, Swedish University of Agricultural Sciences
Faculty of Landscape Architecture, Horticulture and Crop Production Science
Department of Biosystems and Technology

Foreword

It has been some intense years. When I started out on the agroecology programme I had no clear vision of where I wanted it to take me; I just knew that the environmental and social impact of food was too big for me, with my environmental science background, to ignore. I wanted to learn more about it, and about how I could make a positive change.

For me, the programme content has built up the tree roots and trunk that are the basis for my understanding of the food system. The wide stretching branches with millions of leaves of ideas and thoughts, though, are wired out of the interactions I have had with my classmates and agroecology friends from other years, the out-of-school situations my studies have taken me. I have been made aware of the colourful explosion of initiatives out there, relentlessly working for more sustainable food systems that have a better relationship with planet Earth.

An insight that may not seem revolutionary, but nonetheless made a change for me, is that there is no wrong focus of interest within agroecology. It took me a while to get over my regret of not having a lot of practical or theoretical experience with agriculture, and begin to value the kind of knowledge I do have. It was a realisation that grew slowly over the course of many discussions, where my fellow classmates' widely varying opinions on what agroecology should be and aim towards were fruitfully (and at moments frustratingly) blended. What I took home from those discussions - apart from the invaluable practice in being humble and seeing past the initial disagreements I had with people who are now my close friends - is that the best thing every person can do is to act where her knowledge and interest lies. We are all needed, whether we work with the growing of food or the eating of it.

Long before I got to know Alnarp, I was interested in food in the public sphere and the opportunities it holds. I am happy to be able to channel that curiosity, and my experience of working in school kitchens, into this thesis. Change is made out of a lucky combination of realities and dreams. In this case, the reality is what my kitchen colleagues and I have lived, and the dreams are the concepts and inspiring examples I have learned about during my time at the agroecology programme. Whatever the outcome of this, I am looking forward to continuing being inspired by all the creativity that can be found in school canteens in Sweden and abroad - and I hope to in the near future see the work of kitchen staff receive more of the appreciation it deserves.

Abstract

Public catering can have a considerable environmental and educational impact. A scenario of more legume and less meat consumption in Sweden was in the present study used as a tool to explore the possibilities of Swedish public school meals to become more sustainable. Strong structuration theory provided a focus on organisational structure and stakeholder influence, enabling a holistic view of the issue at hand.

A literature review, on the topics of successful implementation of sustainability projects within public catering and individual agency within school meals, provided a knowledge base from which an online survey and a guide for complementary interviews were built. The survey was aimed at municipal dietary managers and assessed their experiences of working with sustainable school meals and their attitudes towards the dietary scenario. Furthermore, the survey tried out a way of measuring how much legumes and meat are served in school canteens. The complementary interviews focused on individual actors' perceived agency to act for sustainable change.

The results suggest that the study participants in general have both the knowledge and interest to make school meals more sustainable. They also saw the more legumes dietary scenario as desirable. Complicating factors are that the priorities of catering organisations and schools are often not well aligned, and resources are lacking to work on collaborations to improve this. It is also often unclear who has the responsibility to make sure teaching on sustainability is carried over from the classroom to the canteen.

Individual agents with a high motivation to make positive change can be important drivers of sustainability projects, but for a change such as significantly greener school meals to take place, a whole food culture needs to change. Educational efforts and finding ways of engaging multiple stakeholders in the decisions are needed to this end.

Unambiguous political goals, with adequate action plans, would give structure to the work on more sustainable school meals. Finding ways of quantifying and comparing sustainability efforts between municipalities would draw attention to the importance of the matter. The approach that was tried out in the present study however proved to be too impractical to use.

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1 Introduction

There is a well-established view that human-induced climate change through emissions of greenhouse gases is an urgent problem, that needs prioritising if life as we know it is to be sustained at planet Earth (Pachauri et al., 2015). The current rate of biodiversity loss is similarly alarming (Secretariat of the Convention on Biological Diversity, 2000). The use of concepts such as planetary boundaries and Earth overshoot day helps visualising this unsustainable situation (e. g. Steffen et al., 2015; McRae et al., 2016), as they put focus on humanity's resource use in relation to what our planet is able to provide.

Food consumption is an area where changes could be made in order to considerably reduce human impact on climate and environment (Willett et al., 2019). One-fourth of the climate impact of Swedish households is derived from food (Livsmedelsverket, 2018b), but that impact varies with dietary choices, production methods and transportation. In 2018, a report was published that explored the environmental, land use and nutritional consequences of a dietary scenario where the Swedish population decreased its meat consumption by 50 per cent and instead added a daily serving of domestically grown legumes (Röös et al., 2018). This scenario diet would reduce food-related climate impact by 20 per cent and land use by 23 per cent, and there would be nutritional benefits as well (ibid.).

In a globalised world, dietary choice has extensive impacts on many areas. Not only human health is affected by what we choose to eat, but also climate, environment, land use and biodiversity (Willett et al., 2019). In a definition by The Food and Agriculture Organization of the United Nations (FAO), diet sustainability is dependent on both environmental impact and nutritional wholesomeness, and also has to count in factors such as culture, accessibility and affordability (Burlingame, 2012). Four crops only (wheat, rice, corn and potatoes) make up 60 per cent of the global calorie consumption (Gliessman, 2015, p 181). In the equation of agricultural diversification, more aspects than direct impacts in nature have to be considered. There are also social issues such as socio-economic resilience for farmers, and cultural heritage and the knowledge associated with it (FAO, 2018; Frison, 2016). Urbanisation is continuing to alienate non-farmers from agriculture and the discourse around food is evolving to admit that the industrialised agri-food system has failed to solve problems of food security (Gliessman, 2015, p 315; Morgan and Sonnino, 2010). Municipal governments are in a position to make innovations that build bridges between the local and national scale of the food system, especially since the consequences of unsustainable food systems easily become visible on the municipal scale (Morgan and Sonnino, 2010; Sonnino, 2009).

Swedish schools are legally bound to cater its students with nutritious food free of charge during school hours (Livsmedelsverket, 2018a). Considering that around 1 000 000 children are entitled to them every weekday (Grausne and Quetel, 2018), these school lunches have a direct environmental impact due to the production and preparation of the meals and also potentially a considerable indirect impact through the pedagogical message they convey. There are, however, substantial differences in to what extent different municipalities make use of the school lunches as a way of working towards sustainability goals. For example, the share of organic purchases in different municipalities ranges from 8 to 80 per cent (Ekomatcentrum, 2018).

1.1 Aim and objectives

Recognising that an increased legume consumption would be a way to reach a more sustainable food system, and that the public sector has an important role to play in getting there, this master project aims to illustrate the opportunities of implementing a "less meat, more legumes" scenario in Swedish public school catering. This includes both looking into what drives the initiation of sustainable transitions and identifying success factors of such transitions. With this aim in mind, the

objectives of this study are to:

- i) explore how different actors view their own responsibilities and mandate regarding changing school catering menus in the direction of having less climate and environmental impact. This with the aim to gain a deeper understanding of how external circumstances and personal values and drivers impact how sustainability goals are worked towards in municipal settings.
- ii) assess municipal dietary managers' attitudes towards the “less meat, more legumes” scenario per se, and its possibilities of implementation. Dietary managers are targeted since they presumably are in touch with many levels of the local school catering system. Their knowledge and views can therefore serve as a good starting point of the discussion.
- iii) develop indicators on the green transition (see 1.2) in schools and use these to map how much legumes in relation to meat is currently served. This in order to see if this is in line with the national average diet and what is needed to reach the “less meat, more legumes” scenario volumes.

This research topic deals with interactions between several complex systems: The global and national food system and its impacts upon the planet's eco- and geosystem, and the smaller but still complex system of local food provision and municipal management. Thus, the framework of agroecology should be well suited to the study due to its inherent interdisciplinary nature.

1.2 Outline

A flow scheme of the study is shown in figure 1. A survey study will shed light on the interest and perceived possibilities of serving more legumes and less meat in Swedish public schools, and complementary interviews will be conducted to explore why or why not actions for more sustainable school lunches are taken. Furthermore, the survey study will be used to try out a way of documenting what will from here on be called “the green transition” - that is, the gradual exclusion of animal products from diets, in favour of plant based proteins derived mainly from legumes.

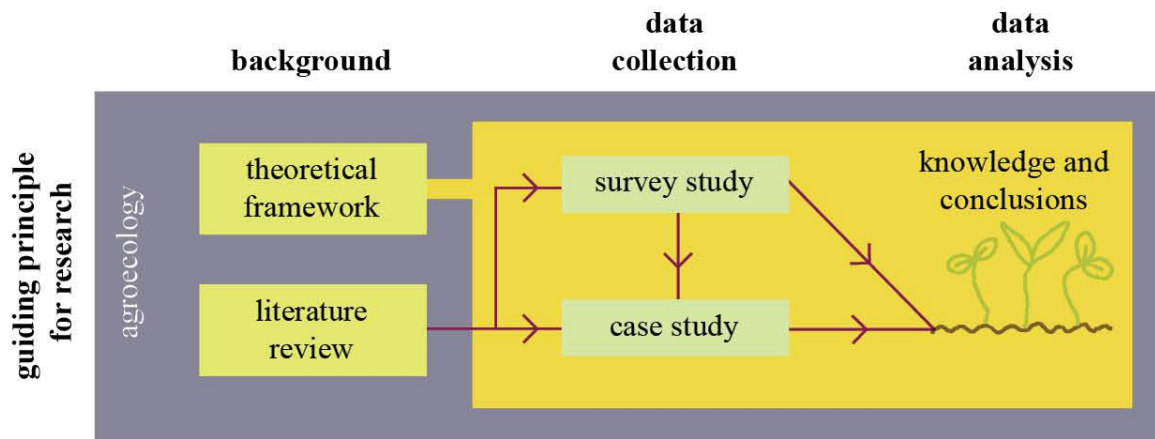


Figure 1: Flow scheme of the study.

2 Background

This section is partly based on the literature review, and aims to show the understanding of agroecology and public school meals that act as a foundation for the discussion that follows later on.

2.1 Agroecological considerations in the green transition

Agroecology can be described as the holistic study of food systems (Francis et al. 2003). It builds on agricultural production measures that 1) promote optimal biomass and nutrient recycling, 2) maintain a healthy soil, 3) economise abiotic resources such as sun and water through microclimate management, 4) aim to maximise biodiversity (on all levels from genetic to landscape) and 5) support ecological services and processes within the agroecosystem (Altieri and Nicholls, 2005, p. 32). Furthermore, as emphasised by Gliessman (2015), a complete agroecological transition necessarily involves structural social change, reestablishing a connection between those who grow food and those who eat it. This is stressed also by Francis et al. (2003) who suggest that the role of the consumers has to be part of the analysis in order to “complete the agroecological cycle”.

There are real agricultural challenges of sustainably growing an additional 26 500 hectares of legumes in Sweden (today's number is 56 000 hectares), and solving those challenges is a prerequisite for making the “less meat, more legumes” scenario possible (Röös et al., 2018). Agroecology can contribute with solutions to doing that in a way that is more sustainable than current predominant industrial practices, that are far from environmentally sound and not optimally suited for facing climate change (Willett et al., 2019). However, the discussion in this thesis will mainly focus on how consumers' choices and actions can support an agroecological transition.

When moving beyond agroecology at a single farm, to instead consider how the whole of a geographical (or otherwise defined) area can take agroecological principles into account, terms such as agroecological territories can be used (Wezel et al., 2016). Considering the pedagogical aspect and the volumes of food involved, public catering should certainly have a possibility to be a part of building sustainable agroecology territories. But what is “agroecology beyond the single farm”?

In order to provide farmers with opportunities to cultivate the land according to agroecological principles, structural issues have to be considered. The access to land, to start with, is tightly intertwined with agroecology: security in land tenure, or lack thereof, may affect how agriculture is performed, and the fight for equal and just access to land is a vital part of social agroecology (Glowa et al., 2019, p. 95). Along the same notes, how food is produced on that land, and who is able to consume it, are issues of food sovereignty. Without the possibility in an area to soundly produce healthy food, that is accessible to the local population, the area will be dependent on import of food. This dependence on the market, and loss of the security that local food production means, is a reason to aim for food sovereignty (Altieri and Toledo, 2011, p. 588).

At a glance, fights for food sovereignty and land justice might not seem relevant in the contemporary Swedish context. It is more common to hear about peasants in other parts of the world rising up against land and water grabbing, the negative implications of free trade, and the loss of seed biodiversity due to industrialisation of agriculture - and in cases suffering outright violence for these efforts (Manahan, 2018). However, issues of agricultural land being difficult to get by and farmers having a hard time earning a living under acceptable working conditions in Sweden are a reality. From 1990 to 2016, the number of farms of 50 hectares and less declined from about 81 000 to 49 500, while there were 6 700 farms bigger than 100 hectares in 2016 compared to 4 000 in 1990 (SCB, 2008; SCB, 2019). NOrdBrük, the Swedish branch of the global

peasants' rights network La Via Campesina, ascribes the rationalisation of agriculture to international political system changes, leading to increasing influence of industry and transnational corporations. The long-term outcome of this is, in their eyes, deprivation of Swedish food sovereignty as we become more and more dependent on import of food (NOOrdBruk, 2016).

So how to change what is unsustainable about these trends, how to start challenging business as usual? González de Molina et al. (2019) have the stance that what they call political agroecology (political ecology applied to agroecosystems and food systems) is necessary for implementing scientific results into real-world practices. Gliessman (2015, p 310) argues that as long as political action is not taken, there will be no real change to the current corporate-dominated food system. The political action, in his view, is to start questioning the ideology that legitimises the system - the ideology that for example holds true that high yields are more important than who produces the food and how, that farming is not a desirable occupation, that consumer demand is the correct tool to guide food production and that technology is the silver bullet that will rid agriculture of all its challenges.

Dietary choices do, in extension, have an effect on all parts of the food system, and so are inextricably interwoven with agroecological issues not only of a social character, but also regarding how farming impacts our nature and climate (Gliessman, 2015, p. 320). González de Molina et al. (2019, p. 159) highlight public catering as an area where knowledge on sustainable food can be disseminated to eaters at the same time as practical action is taken to support growers who strive for a sustainable production. Public policies targeting service provision, such as public school meals, are argued to hold opportunities for scaling up agroecological efforts to an extent that cannot be achieved by individual, smaller actors (ibid., p. 156).

In practical terms, an agroecological alternative to the industrial food system track we are on would include a revival of local, shorter value chains that bring eaters and growers closer together. Small-scale agriculture, that has the potential of operating on nature's terms, could then become more profitable (Chancellor, 2019). However, the rationale for pursuing a localised food system always has to be thoroughly considered. The local scale is not a guarantee for sustainability, as the outcomes of locality are contextual (Born and Purcell, 2006; Morgan, 2008). There are examples to draw on where school catering in Sweden has aimed to reconnect to local food production. For example, more local procurement can be achieved by organising food distribution centers (so that individual farmers won't have to deliver their products to every school) (Energivärlden, 2018) or splitting the call for tenders into several smaller product categories (to enable for bids from smaller suppliers) (LRF, 2012). There are even municipalities who have gotten their own share in community supported agriculture schemes (Södertälje kommun, 2017).

The cultivation of grain legumes has many environmental and possibly economic benefits. Enhancement of soil fertility and better conditions for supporting insect biodiversity are direct improvements of the natural conditions, and an indirect aid for the farmer as she can spend less on fertilisers and her other crops get better pollinated. There are however challenges involved in grain legume cultivation, too, such as soil-borne diseases, and modern dietary patterns have steered cultivation away from legumes so that they are nowadays an underused crop group (Röös et al., 2018). Public catering has the possibility to support farmers who want to grow grain legumes by paying a fair price for their products, that reflects the risk involved in cultivation. This is encompassed within the concept of food justice, that is central for achieving the structural societal change that is necessary for a completely agroecological food system, and becomes yet another argument for shorter value chains since this allows for less profit to leak out on food's way from farm to table (Gliessman, 2015, ch. 25).

2.2 Successful implementation of sustainability projects

The literature review (see section 4.1) provided a background on sustainability projects within public catering. Out of eight reviewed articles (see appendix A), the themes that were most commonly mentioned when it comes to successful implementation of change were:

- the importance of viewing the project at hand in a wider context and connecting it to several political targets (7 mentions)
- the use of explicit criteria in the transition process (6)
- the presence of facilitators/engaged individuals at several levels/parts of the organisation/different organisations (6)
- champions; committed and/or resourceful individuals/groups (5)

There are several examples of successful cases where multiple targets have been achieved, serving to both anchor the sustainability project in a broader context and making good use of resources. A few schools in Finland started selling leftover lunch food for a cheap price to food insecure customers (low income areas) (Grivins, 2018). Sometimes the initiative to buy local food aimed primarily at stimulating the local economy, but ended up raising the quality of school meals too (Mikkola, 2009). Tendering criteria can aim to support humanitarian causes (such as criminal rehabilitation) and food waste from plates can be donated to animal shelters (Sonnino, 2009).

In Finland, where schools meals like in Sweden are free of charge, economical constraints is commonly the main obstacle to sustainable procurement (Lehtinen, 2011). Other factors might also stand in the way of sustainable school meals, though, such as a lack of goals to aim towards. In one Finnish example, school canteens were handed a strategic aim to include more local and organic food in the menus. Local food was seen by the procurers as having an intrinsic value, and care was taken to develop contacts with local farmers, whereas the organic goal was neglected due to lack of extra funding to cover the higher cost, and lack of evaluation of the project. In another case, the initiative to work with sustainability came from within the catering organisation, but due to a lack of definitions of how to actually measure sustainability the project was not successful. Organic certifications and health claims were not trusted and the contact with local producers was unsatisfactory, so in the end the conventional alternative was perceived as superior (Mikkola, 2009). In the Swedish context, the importance of politically anchored policies regarding food and catering, with action plans tied to them, has been emphasised (Friis, 2015).

Where sustainability projects have been successfully implemented, one very dedicated person or group of people can often be found within the organisation, pushing for the project when tradeoffs have to be considered. In Rome, the parent-initiated Canteen Committee has managed to raise the quality of the public school meals, through a holistic engagement in the catering process and well organised communication efforts to ensure mutual understanding between actors (Sonnino, 2009). Mutual understanding was also underscored in a study of five European cases of sustainable procurement practices; these practices were all implemented not on their own, but integrated in wider political strategies, ensuring that facilitators within many different sectors reached understanding and got involved (Smith et al., 2016).

Stahlbrand (2016) studied the British nationwide "Food For Life" catering mark program, and used a multi-level perspective to understand the background for the program's successful implementation at two universities. Although landscape-level factors, such as production standards and student movements, were found to have enabled the implementation, the author attributes the success to individual change agents at the two universities. The heads of catering (and sustainability, in one case) were the driving forces, putting down a lot of time and energy in receiving the certification. A general conclusion for the catering mark program was that actors both upstream and downstream

from the kitchen had to be in on it for it to be successful.

2.3 Responsibility and power to act for sustainability

The previous section dealt with sustainable public procurement, what results have been produced, what the success factors have been and what obstacles have been encountered. But what about the basis for these undertakings? Whose passion or ethics, or what political decisions, initiated the sustainability projects?

Stahlbrand (2016) notes that since the food sector is largely controlled by transnational corporations, going against their agendas and making changes to the regime is inherently a process of conflict. Mikkelsen and Sylvest (2012) also note that public food service have to juggle “a number of outside pressures”, which impact the route each catering organisation takes. They conclude, in line with Stahlbrand, that the Danish catering organisations in their study were initially shaken as they were asked to serve more organic food but that, in time, this destabilisation led to a climate of curiosity and higher resilience (ibid.). Another study also highlights this resistance to change, which in that case resulted in political goals for sustainable meals that, in order to be accepted, had to be vaguely defined. This led to the responsibility of concretising the goals being transferred from decision-makers to practitioners (Wahlen et al., 2012). The same situation appeared in a couple of studies on Swedish public catering, where the responsibility for implementing sustainability projects either fell on the schools (Ejneröos and Andersson Löfström, 2010) or was not allocated to any one instance at all, since the political sustainability targets came without action plans (Friis, 2015).

So the initiation phase of sustainability projects, with its conflicts between “the routine way of things”, external pressures and forces aiming for change, appears to be an impediment. Where this phase has been overcome, someone has seen it as their responsibility to push this conflict in order to make sustainable change. This importance of “champions” is later on reflected in the long-term success factors of sustainability projects, as discussed above.

There are indications that the motivations for sustainability projects may differ between municipalities. In an Italian example, a high share of organic purchases is more common in urban areas than in rural ones, which may be a result of the alienation of urban consumers from production. Certifications (such as organic) become more important for those who do not have a personal connection and trust to farming (Filippini et al., 2018).

In a Swedish study on why municipalities chose to report on their efforts to increase local ecological sustainability, it was found that the main drivers were to achieve agreed targets and to facilitate measures based on the results of the report (Henebäck and Jernmo, 2016). This suggests that the feeling of responsibility is directed towards the work of sustainable development itself, rather than the image of being sustainable (some of the drivers that scored lower were concerned with fulfilling the expectations of society and measuring performance). This can be complemented by the findings of Grandia et al. (2014), who concluded that only a belief in the inherent benefits of sustainable procurement affected sustainable procurement behaviour at the individual level, while fear of penalties or peer pressure did not promote such behaviour. It makes sense, then, to assume that knowledge of the impacts of food production is important for motivating food procurers to act sustainably.

2.4 The Swedish municipal organisation

Swedish municipalities are politically governed organisations, that are allowed (and in some cases required) to themselves run services of local public concern. The services are mainly tax funded, and only some services can have a usage fee. The municipal councils, *fullmäktige*, are voted for by

the inhabitants of the municipality, and fullmäktige in its turn appoints *nämnder*, political boards to plan the municipality's services. Nämnderna are staffed by politicians and in general free to decide on how to execute the services they plan in a fashion they see fit (SFS 2017:725). The executive organisations, *förvaltningar*, are instructed by the nämnder. Public schools are run by the municipalities, and they have to cater their pupils with nutritionally sound lunches free of charge (SFS 2010:800). As soon as a procuring authority make purchases above a certain value, the Swedish Public Procurement Act (LOU) is applied (SFS 2016:1145), to ensure that public funds are used in the best way possible.

School catering is usually part of either the förvaltning that handles service, in which case catering for e. g. preschools, schools and elderly care are run in close collaboration, or the förvaltning that handles schools. In the latter case, the organisationally closest manager to the kitchen staff might be the school principal or a head of kitchen, instead of a municipal dietary manager which is usually the case when all catering is run through the same förvaltning (Grausne and Quetel, 2018).

3 Theoretical framework

The theoretical framework in this study can be seen as a conceptual model that, applied to both the collection and the interpretation of data, guides the focus of the study (Creswell, 2014, ch. 3). Since public school meals are influenced by a wide network of stakeholders, it was seen as valuable to apply a theoretical framework that acknowledges and helps making sense of this complexity of influences and their relation to each other.

3.1 Structuration theory

A dissonance exists between on the one hand the extensive sources of knowledge about human societies' impact on climatic and environmental conditions, and on the other the persistency of the unsustainable practices of these societies although faced with this knowledge. With this in mind, there is a need to understand why or why not actions are taken to actually tackle climate change. In the present thesis, the analytical framework of strong structuration theory (SST) will be used alongside the guiding principle of agroecology to make sense of the collected data.

SST aims to bring together the perspectives of agency, based in a humanist understanding of the power of individual choice, and structure, that instead emphasises the influence of societal structures on action (Oppong, 2014). The main idea of structuration is to highlight that societal structures are reproduced through individual actions, but these actions are also guided by societal structures, and so both these (and the reciprocative relationship between them) have to be considered when the cause of someone's actions is analysed. It is argued that to account for the full cycle of structuration, one has to consider four elements (Stones, 2005):

- external structures (the boundaries set by the actor's environment)
- internal structures (the actor's own understanding of the structures external to her - both context-specific and those that are general to her, such as experiences and values)
- active agency (routine and reflective actions)
- outcomes (which can be generation of both structures and events).

SST helps in analysing why people are choosing to act or not to act. Are their actions actually as constrained by external structures as they are perceived to be, or is the roadblock mainly in their own heads, as a consequence of not reflecting upon how they have translated the external structures into internal ones (Kholeif and Jack, 2019)? It is in the active agency that a dissonance can sometimes be found, caused by either contradictions within an agent's set of values, or

contradictions between these values and the agent's perceived action space. This dissonance is sometimes referred to as *ideological dilemmas* and can be manifested in actions that may at a first glance seem illogical with regards to the actor's values (Pettersson, 2017; Post and Mikkola, 2012; Werner and Lundberg, 2018). These dynamics can be relevant to consider in complex fields such as sustainability, where multiple goals typically compete for attention and resources may be scarce.

Den Hond et al. (2012) drew the conclusion that structuration theory is a promising tool for analysing processes of organisational change. Gliessman (2015, p 301) motivates the virtues of agroecology by stating that it is not enough to understand that the current food system, built on industrial agriculture, is flawed - for you still have to deal with those who despite those flaws advocate it. Change cannot be brought about without delving into the social realm and taking into account "the ways people interpret ideas and facts". Swedish public catering organisations exist within a larger context. They unavoidably receive influences, passively and actively, from all Swedish municipalities providing the same service, from other, private, catering organisations, and from the national and global food production systems. SST will in the present thesis be used to analyse what internal and external structures guide actors involved in Swedish public catering. This approach has previously been taken by e. g. Braun et al. (2018), who studied an agri-food value chain within school catering and chose SST as a theoretical lens with the motivation that it is useful for analysing relationships between actors in a system.

3.2 Structuration theory applied to municipal catering

Based on this understanding of SST, a model of Swedish municipal catering organisations, and the relationship between their actors, can be built. This model is conceptualised in figure 2, where the internal structures are made up of the individual agents within the catering organisation such as for example dietary managers, chefs and procurement personnel. Their agency builds on their personal experiences and values, together with how they translate their external structures into possibilities of action. The external structures are what is going on within and outside of the municipal organisation and influencing it - may it be pupils, parents and teachers, geographical setting, the voters who decide on the local political leadership, or more physically remote or regulatory structures such as national policies, regulations and the existing infrastructure around food.

The outcomes from individual agency are then events, such as the actual school lunch and the environmental, climate and social impact that comes with it, but also the generation of new structures through these events. Depending, for example, on how the school lunch is received by the pupils and teachers, these may raise their voice in favour of or against it, changing the external structures and thereby also the agency of the implementors. Demand on certain food products may influence what wholesalers stock and what farmers grow.

This model of organisation and influence will in the following be used as an analytical tool to make sense of the study's empirical data. The model is centered around the catering organisation, since most of the primary data comes from within that organisation. The model is however roughly applicable to the couple of school principals that were interviewed as well, by keeping in mind that they might have slightly different influences and that their active agency is not primarily within school lunches.

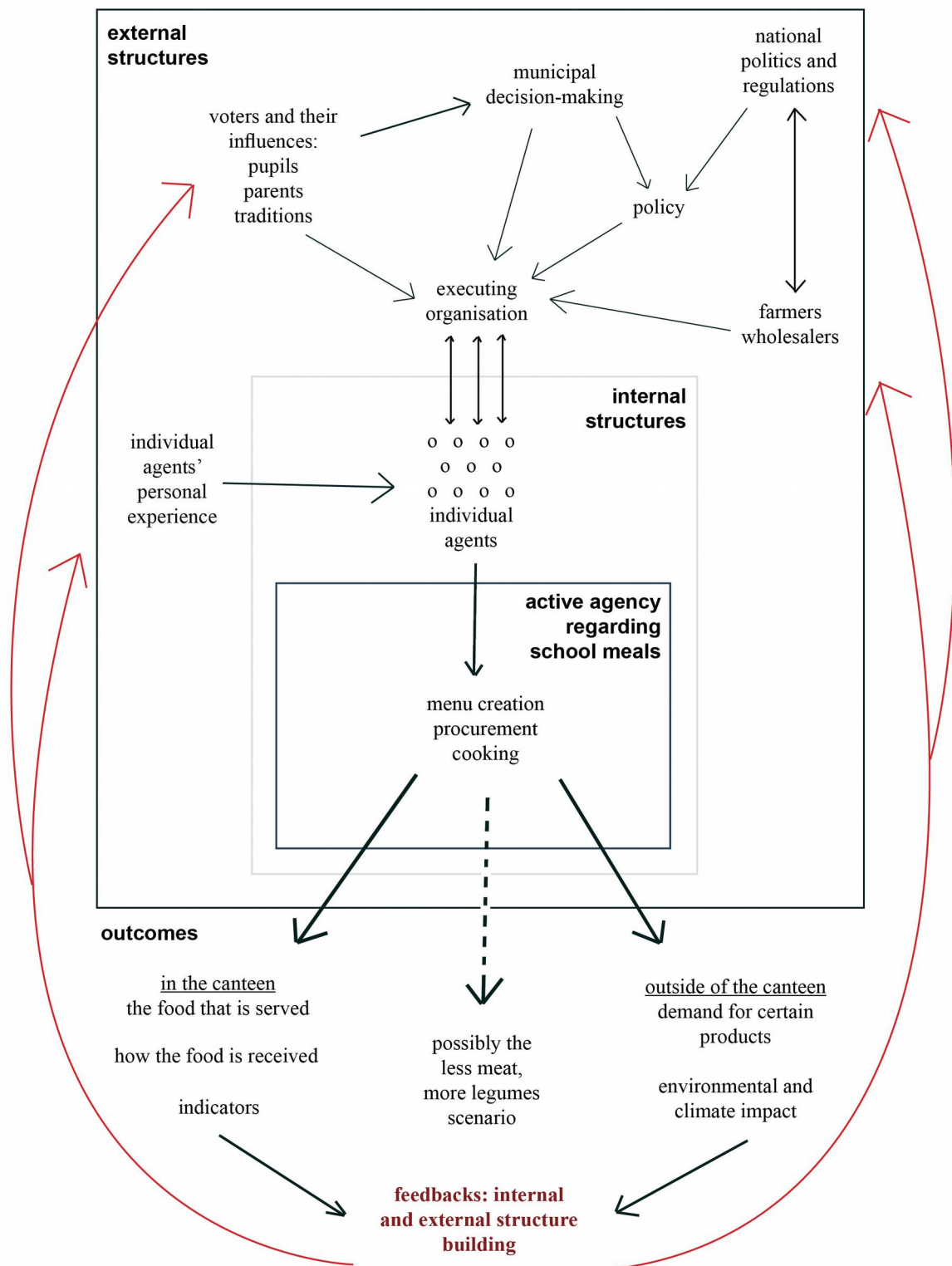


Figure 2: A conceptual view of structures and agency in Swedish municipal catering.

4 Material and methods

In social sciences research, the use of mixed methods aims to strengthen understanding and results by offering a wider variety of approaches to validation, theory building and testing and wide versus deep research (Hunter and Brewer, 2003). The definition of mixed methods research is that both quantitative and qualitative data collection methods are employed during the course of the study, and the analysis builds on considering the synergy between the types of data collected (Creswell, 2014). When multiple methods are employed in a study, in an appropriate design, some of the limitations of single-method research can be overcome. It is for example possible to qualitatively build a theory in the opening phases of a study, and in a later stage test it quantitatively through instruments such as surveys (Hunter and Brewer, 2003). This mix-and-match opportunity was made use of in the present study. However, as Creswell (2014, p. 32) notes, the concepts of quantitative and qualitative research are fluid rather than binary, and the methods employed in this study are indeed not readily categorised, even though they can be seen as mainly either exploring human behaviour or rather searching for statistical trends.

The methods used in this study are described in detail in the following sections.

4.1 Literature review

The literature review (modified from De Irala-Estévez et al. (2000) and Grant and Booth (2009)) was conducted in order to gain an initial understanding about notions of responsibility, hindrances and possibilities regarding ecological sustainability within the public sector (mainly catering, but also other fields where the findings were relevant). The results were used to tailor the survey and the complementary interviews in a useful way. A second aim of the review was to see what theoretical frameworks had been used to analyse related topics and questions in previous works. The review was conducted according to the framework of a systematised review (Grant and Booth, 2009). Since the Swedish public school catering system is quite rare in that the lunches are free of charge (Skolverket, 2019), not all reviewed article cases could be translated to the Swedish context in a straightforward way. For example, the survey target group was municipal dietary managers, but in the review the attitudes and views of people in different decision-making positions within both public and private catering have been taken into account and served as a proxy for the actual target group.

The literature review was carried out in the database Web of Science. It targeted current knowledge about the inquiry *"what affects the implementation of sustainable practices in public catering?"*, which was seen as a relevant background for the study. The search terms (public AND food AND procurement AND sustainab*) generated 71 results, of which 48 were deemed interesting judging by the title alone. After a review of the abstracts, 16 of these were selected for further analysis based on that they seemed to be concerned with the previously mentioned inquiry about implementation on sustainable practices and that they were available online. Yet another selection was made upon closer reading of the articles, where those not analysing driving forces behind the examined practices were excluded. In the end, a collection of 8 articles was derived, which is summarised in appendix A and elaborated in section 2.2.

4.2 Survey study

The survey (appendix C) was constituted of two parts: part one was concerned with the attitudes of dietary managers, and part two tried out a model of data collection for tracking the green transition.

Part one of the survey, that aimed to explore perceptions of sustainability and feasibility of the "less meat, more legumes" scenario, was designed to assess municipal dietary managers' attitudes towards i) their own responsibilities and mandate regarding pushing school catering menus in the

direction of having less climate and environmental impact and ii) the scenario per se and its possibilities of implementation. With the idea of ideological dilemmas in mind, the questions were targeting either conceptual ideas about what is important and what should ideally be done, or the pragmatic reality of what possibilities exist for acting towards sustainable change. For each multiple choice survey question, possible answers were based on the literature review. A draft of the survey was discussed with the dietary managers in two municipalities. This with the aim of assessing whether they perceived the questions relevant, and how the food purchase volumes part could be made as simple yet on-target as possible. The survey was then adjusted accordingly.

Part two of the survey, concerned with indicators of the green transition, asked the dietary managers to provide data on purchasing volumes of a chosen range of foods during the year 2018. This was done partly in order to map the current legume/meat status of Swedish school meals, but the main goal was to assess the feasibility of this data collection approach and assess whether this data can be readily provided. Are the results relevant? Are the instructions unambiguous or do they need to be changed? In the survey, a field for reflections was provided.

E-mail addresses to the dietary managers in all Swedish municipalities were collected from each municipality's website, and in the cases where no such information was provided, the e-mail was sent instead through the general contact e-mail address of the municipality. The survey was sent out in May 2019, along with an introductory letter and a one-page summary of the "less meat, more legumes" report that the study built on (see appendix B). The survey was sent out to all 290 municipalities of Sweden, and the responses were collected through Google Forms. 74 responses were collected, of which two were from different public officials within the same municipality. Since these two responses differ somewhat, they are both excluded from the calculations. This equals a response rate of 25 per cent.

The results from the survey were entered into and processed with Apache OpenOffice Calc.

4.3 Complementary interviews

Recognising that a survey would not be well fitted to answer questions of individual motivators and relationships of power, due to the complexity of such subjects, a few complementary interviews were carried out in one municipal catering organisation, in March 2020. Interviewees were selected through purposeful sampling (Palinkas et al. 2015; Bryman, 2008) with the aim to cover as much of the organisation as possible. Purposeful sampling is common in implementation research, which is concerned with the translation of scientific results concerning public health into real-world practices (Palinkas et al., 2015). The present study has many aspects in common with implementation research, such as the need for a holistic understanding of relationships between actors, and the same methods can therefore be expected to be useful. Five semi-structured interviews (Bryman, 2008) were carried out, in Swedish, at the interviewees' workplaces or by phone. The interview guide can be found in appendix D. The face-to-face interviews were audio-recorded and then summarised in text, while for the phone interviews notes were taken to ease the summarising of what had been said. The interviewees were: two dietary managers, two principals at schools, and one chef in the main municipal kitchen.

The decision was made not to transcribe the interviews verbatim, as only certain themes were of analytical interest and quotes would anyway have to be translated into English for the report. The summaries were used as a base for the analysis.

The complementary interviews were conducted in the municipality of Burlöv, which was deemed suitable partly because of practical reasons (the possibility of face-to-face interviews), partly because it is fairly representative of an average Swedish municipality with regards to number of inhabitants (around 19 000, but area-wise Burlöv is the second smallest municipality in Sweden)

and political view (SCB, 2020). Burlöv is situated at the west coast, just north of Malmö, and has two main towns. It is defined by its industry hub and shopping mall, which both provide job opportunities and lead to many people commuting to Burlöv for work (Burlöv kommun, 2019).

4.4 Synthesis of data

As a way of synthesising the findings from the literature review, the complementary interviews and the survey study, the model of structure and agency in municipal catering (see section 3.2) was used. With this as a basis, main categories (the first two parts of structuration) and subcategories (based on what part of the system the findings referred to) were detected. The categories were as follows:

- external structures: comprising circumstances that are outside of the agent's control
 - > politics
 - > eaters/voters/setting
 - > catering organisation
- internal structures: relating to how the agent perceives her possibilities to act
 - > structure translation
 - > values and experiences

Strong structuration theory is useful to apply where both agents and their external structures are taken into consideration (Stones, 2005, p. 117). As such it was valuable for analysing the empirical data of the study and assessing the feasibility of the "less meat, more legumes" scenario, since these are real-time events of which structure-building is an important feature. As for the step of synthesising the findings, though, not all parts of SST were as useful to consider. It was judged as complicated and not very relevant to take the reflexive structure building into account. Hence, all structures described in the studies were treated as already existing, that is, fitting into one of the two categories presented above. It is conventionally accepted that analyses using SST often start out by focusing on one of the parts of the structuration cycle only, even if that later on often leads to reflections regarding the other parts as well (Stones, 2005, p. 117). Also noteworthy is that, by the understanding of SST presented in section 3.1, in order to see what internal structures an actor has it is not enough to just know about their actions and their external structures. It is about *why* they act in a certain way. Therefore more insights on internal structures were yielded from the complementary interviews than in the survey.

The categories and results were compiled in a table (see a condensed version in table 1), and used as a basis for comparing, contrasting and summarising the findings.

5 Results and discussion

The results of the survey study and interviews are in the following presented, and discussed with regards to the background (the literature review) and the special objectives of the study. The first subject to be dealt with is why, and in what way, individual actors feel responsibility and power to act for sustainable change within public catering, and in what way this can be influenced by external factors (objective i). This lays the foundation for the discussion in the next section, which concerns Swedish municipal dietary managers' view on the possibilities and challenges of serving more domestically grown legumes and less meat in school canteens (objective ii). It can be assumed that the knowledge gained about sustainability projects in general can be applied to the specific case of greening the school lunches as well. To conclude the presentation of the empirical data, the third section will discuss the findings concerning measuring the green transition (objective iii). Finally, the results will be considered in the light of the agroecological background.

5.1 Responsibility, motivation and success factors of sustainability projects

This section will deal with why sustainability projects within public catering are initiated, what motivates the agents who implement the changes and in what way external structures set the limits for this. The concepts of sustainability and climate and environmental impact were in the survey defined as follows:

Ecological sustainability is a complex target that has to be dealt with accordingly. This survey is focused only on what is served in the school canteens, that is, the climate and environmental impact of the menus in themselves. Measures to e g reduce food waste are not included in this survey.

Climate impact is defined as the greenhouse gas emissions generated by food. Environmental impact is defined as the emission of environmentally hazardous substances, contribution to eutrophication of water bodies and streams, and negative impact on flora and fauna. Sustainability, if not specified otherwise, equals ecological sustainability in the context of this survey.

The current situation in Swedish schools

In the survey, almost all respondents had seen the public school catering in their municipality decrease in negative climate and environmental impact (see appendix C for the given definition of these concepts) during their time in office. When asked from whom the initiative to cut the negative impacts had come, 61 said the initiative came from the municipal catering administration (including themselves), 41 named local politicians or political parties, 31 named the school kitchens (chefs etc.), and 4 mentioned the pedagogical staff and pupils.

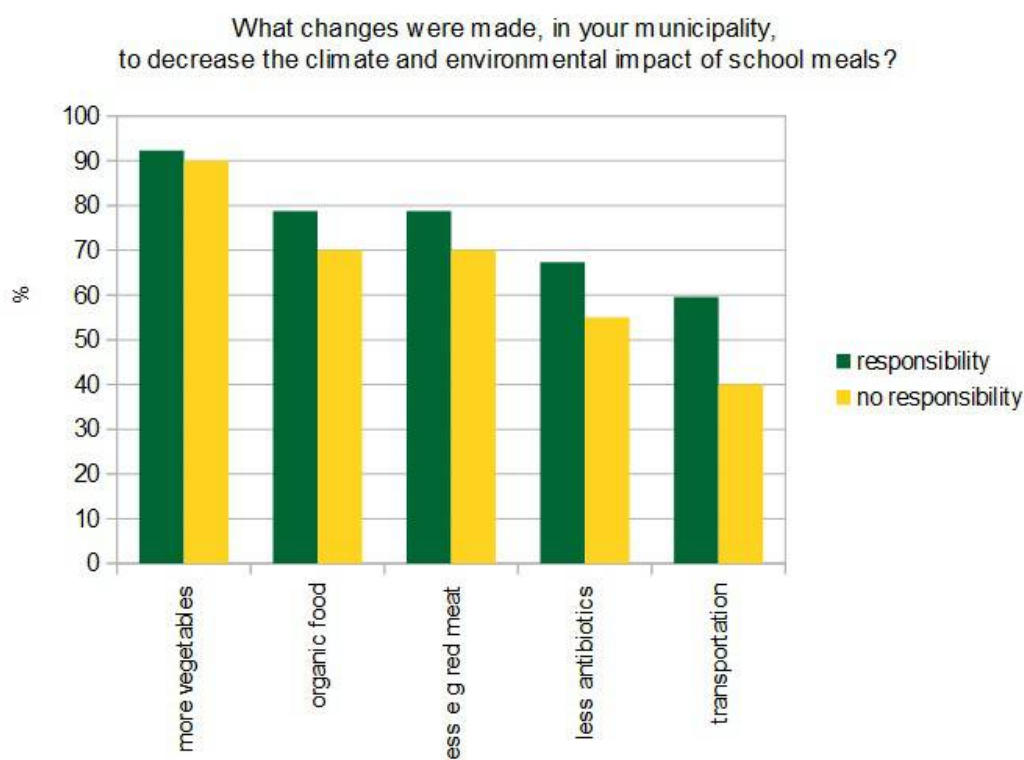


Table 1: If the respondent, during their time in office, had seen changes to decrease the negative climate and environmental impacts of school meals in their municipality, what were the changes? Multiple alternatives could be chosen. Red bars refer to dietary managers who, in their job description or through local policy, have a formal responsibility to lower the negative climate impact of school meals, whereas blue bars refer to those who have no such responsibility. Example of percentage calculation: 52 respondents have formal responsibility. 48 of these have seen the menus change to contain more vegetables. $(48/52) \cdot 100 \approx 92,3$ per cent.

As for what had actually been done, the most common measure was to increase the share of plant-based food in the menus. After that came "more sustainability-labeled foods" (such as organic) and "serving lower volumes of foods with a high environmental impact" (such as red meat). Serving less foods with a high usage of antibiotics had slightly less mentions, as had reducing the emissions from transports.

52 respondents out of 72 had, through their job description or policy documents, a formal responsibility to work towards reducing the climate and environmental impact of the school meals. The group who had formal responsibility had more often taken all the different sustainability measures than the group with no formal responsibility (see table 1). The least difference between the groups was for "more plant-based foods", which around 90 per cent of the respondents from each group had implemented. The biggest difference was for the measure "reducing emissions from transports". This indicates that formal responsibility does go together with the number of sustainability measures taken. However, there is nothing really saying that this is a causal connection. It might as well be that the formal responsibility is there because there is a political interest in sustainable school meals, in which case there are probably other structures in the municipality that support these measures too.

Perceptions of responsibility

In the complementary interviews, when asked who has the opportunity and responsibility to implement changes to further the sustainability work, the perceived limitations in each respondent's professional role became apparent. Dietary managers felt they had little opportunity to educate the pupils on menu changes (even though efforts were made such as information campaigns aimed at parents), and that the school board should do more to this end. One principal, on the other hand, acknowledged their theoretical power to improve the carry-over of education on sustainability from the classroom to the canteen, but in the end saw it as very difficult due to practical issues such as scheduling limitations and the hectic canteen environment. As will be touched upon in the next section too, a fuzzy allocation of responsibility and power to make changes is ultimately a widespread challenge.

A lesson learned in this study is the difficulty in finding out about *why* individual actors feel responsibility or not, without spending time with them and getting to know them. However, considering that successful work for sustainable change requires an innate belief from the actors in what they are doing (Grandia et al., 2014), it should be important for a municipality to hire staff who are genuinely interested in environmental and climate issues. All survey respondents except one said they feel a moral responsibility to work for sustainable change. However, many of them thought that for the "less meat, more legumes" scenario to come true, another party has to change their mind or be ridden of ignorance. This indicates a limit to the use of responsibility alone.

Drivers of change

The interviewees in Burlöv repeatedly mentioned targets and guidelines, on different political levels, as being important drivers of sustainable change. International climate agreements were seen as indisputable goals, and guidelines from the National Food Agency and the government worked as a support for catering staff who argued for more radical climate action than their local politicians prescribed. National municipal quality rankings were also mentioned as having a big influence on how seriously different issues are taken. The reasoning went that if sustainable school meals were better represented in quality rankings and competitions, it would receive a greater attention from the local politicians. From this, it seems receiving recognition for one's work might fuel sustainability projects. This can be related to having explicit targets to work towards (e. g. Friis, 2015). Grandia et al. (2015) found that inherent beliefs in sustainability are a more common driving force than presenting a good image to others. The benefit of competitive elements does not necessarily go against this. Competition should, however, maybe be seen as a way of putting school meals in the spotlight, rather than something that will in itself lead to sustainable change.

The importance of champions (e. g. Mikkelsen and Sylvest, 2012; Stahlbrand, 2016) did make an appearance in the complementary interviews, where the main dietary manager was portrayed as having enabled the work on sustainability that was going on in the municipality. That one interviewee greatly appreciated the presence of national dietary guidelines and sustainability targets, for being something to refer to and lean against, also seems to suggest a feeling of having to act as a champion and work against the tide. Something to look further into is how sustainable it is to rely on these champions for the change to last. These inspiring individuals might decide to change jobs, or they might not have the energy to keep doing more than their job description calls for in the long run.

When it comes to facilitating the work for those who feel a responsibility for sustainable school meals, several factors seem worthy of discussion. One aspect that seemed to influence dietary managers' motivation to try out new projects was the organisational structure of the municipality. In Burlöv, catering service was run through a different instance (förvaltning) than the schools, leading to school lunches having the character of a purchased service rather than an integrated part of the teaching. In extension, this led to less daring projects, such as new dishes, from the kitchen's side since they would take care not to get criticised. A wish was expressed that the school itself should request these menu changes. Another effect of this setup was that it was difficult to align priorities with the school and work on the pupils' acceptance of the menu.

A common wish in the survey was that not only pupils, but also teachers and parents, should have a higher acceptance of menu changes. This indeed suggests that a climate of trust between these stakeholders is not always a reality. Solving this seems, from the complementary interviews, to be a case specific issue. One of the interviewed principals saw the challenges of making the school lunch a pleasant and educative experience, but seemed to think it still had always worked out well at their school. For the other principal, juggling between priorities simply did not leave any space to include a more pedagogical take on the lunches. Time was too scarce, teachers did not have any opportunities to talk to the schoolchildren about food. What seemed to differ between these two schools was the canteen environment, that was described as calm and well planned in one school, and rather stressful in the other. Whether preconditions such as canteen layout and number of pupils and staff differ, or the matter is rather one of planning, the conclusion is still that one solution will probably not fit all schools. On the bright side, maybe there is inspiration to be found even within the same municipality on how to improve this situation. Turning to positive examples, a discussion forum setup (Sonnino, 2009) seems to have worked well for trust-building and knowledge-sharing in the Italian context, and might be an option to consider in Sweden as well.

5.2 Serving more legumes and less meat

In the following, results will be presented and discussed that relate to the possibilities of implementing the "less meat, more legumes" scenario in public schools. These findings are mainly from the part of the survey that targeted scenario implementation, but also from the interviews as those respondents were talking some about their experiences of working for greener menus.

Views on sustainable school catering

When asked what the survey respondents see as the most important sustainability gains from substituting plant-based foods for meat in school catering, there was not a big difference between the alternatives. "Climate and environment" was rated high, as was "human health", "supporting Swedish agriculture" (through releasing economic means to prioritise Swedish produce) and "animal welfare". Regarding how important different measures are in order to reach ecological sustainability in general, it was seen as most important to reduce food waste, although serving more vegetables and more Swedish produce, and reducing the impact of packaging, were also rated very high.

The complementary interviews touched upon personal perceptions of sustainable school meals. Reducing food waste was commonly mentioned, as was serving more vegetarian food. All respondents also named local or Swedish produce as being important. Examples of motivations for this were supporting the local economy, keeping emissions and environmental impact local and traceable, reducing transports and valuing Swedish production standards.

One survey question asked respondents to rate different benefits of greener menus with respect to how important they find them. It turned out that all of the given alternatives (such as climate, human health and animal welfare) were seen as important. This might be useful to consider in the light of the literature finding that sustainability projects might be more successful if they target multiple goals (e. g. Grivins, 2018; Mikkola, 2009; Sonnino, 2009). Seeing what issues are relevant in each municipality, and aiming to create projects that address several of them and create synergies might therefore be worthwhile.

Desirability and feasibility of the dietary scenario in schools

In the survey, respondents were presented with a summary of the "less meat, more legumes" scenario (appendix B), and asked how desirable they perceived it on a scale from 1 (not desirable) to 7 (desirable). The average answer was 5,93, with a standard deviation of 1. Three questions then asked respondents to rate different measures within their organisation, politics and the schools respectively, with respect to how important they are if the diet scenario is to be fulfilled. The measures were based on what was found important in the literature review. The results are presented in the following and visualised in tables 2-4, and after that discussed together with the relevant case study findings:

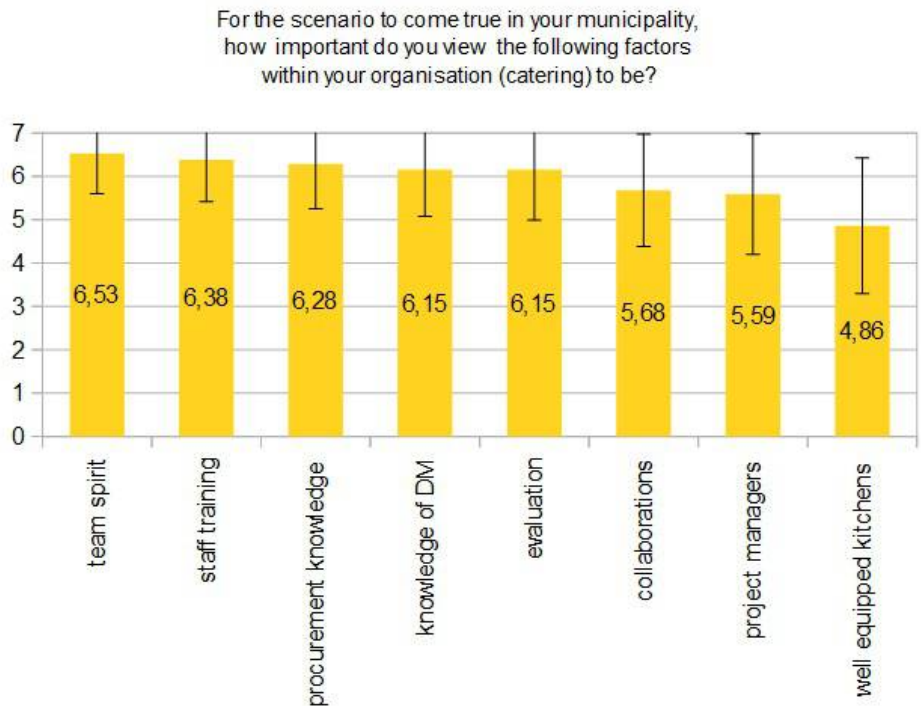


Table 2: The importance of different measures within the municipal catering organisation, if the diet scenario is to be fulfilled. Error bars show one standard deviation. Numbers on bars are the mean values.

- Within the **municipal catering organisation**, five aspects were seen as very important: a proper team spirit within the organisation where all coworkers feel involved, that the kitchen staff is appropriately educated to implement the changes, having good knowledge about setting requirements in the food procurement process, that the dietary managers themselves have updated knowledge and can give expert knowledge, and that there are good tools to evaluate and communicate what changes are made to the menus.

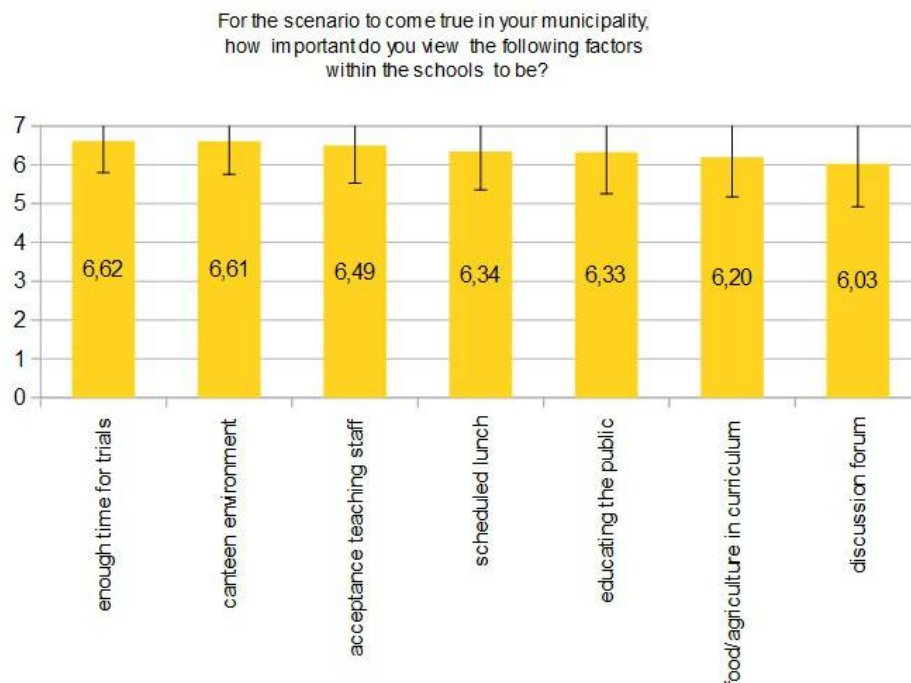


Table 3: The importance of different measures within schools, if the diet scenario is to be fulfilled. Error bars show one standard deviation. Numbers on bars are the mean values.

- Within **the schools**, all measures received a high mean score. Two of them were a little more consistently rated very high: allowing new dishes a run-in period so that pupils can get used to them, and having a good canteen setup where the food is favourably presented. The other given alternatives, also rated very high, were: accepting and knowledgeable teaching staff, giving children better eating habits and preconditions of liking the greener menu through an increase of the general knowledge about sustainable food, that the lunch is scheduled separately from the break, and to integrate food and agriculture better into the school curriculum. Lastly, it was also seen as important to have a forum where different actors (such as parents, chefs, dietary managers and dietitians) can discuss the menu. Comments on the survey further emphasised the need to gain acceptance for menu changes from the eaters.

An important obstacle to implementing menu changes are, as discussed in the previous section, a lack of knowledge and collaboration will in interested parties. The survey and complementary interviews show that communication and collaboration might be facilitated by a favourable organisational structure, for example if catering and schools are run through the same municipal instance rather than being treated as separate interest fields. This was also mentioned in a report by the Swedish National Food Agency. Their reasoning is that the benefit of organising school meals through the school administration is better opportunities of collaboration with the schools, whereas a setup with catering under a separate service administration instead offers easier alignment between catering in schools, preschools and elderly care (Grausne and Quetel, 2018, p. 40). The

knowledge gap is confirmed in a report by RISE that compiles research on Swedish public catering; there is a general perception that the recommendations to better integrate the school meal in teaching does not really reach beyond the catering organisation. The school lunches' pedagogic potential could be better used by solving this lack of collaboration interest from the schools, and also by doing more research on how to practically harvest this pedagogical potential (Holmberg, 2019, p. 33).

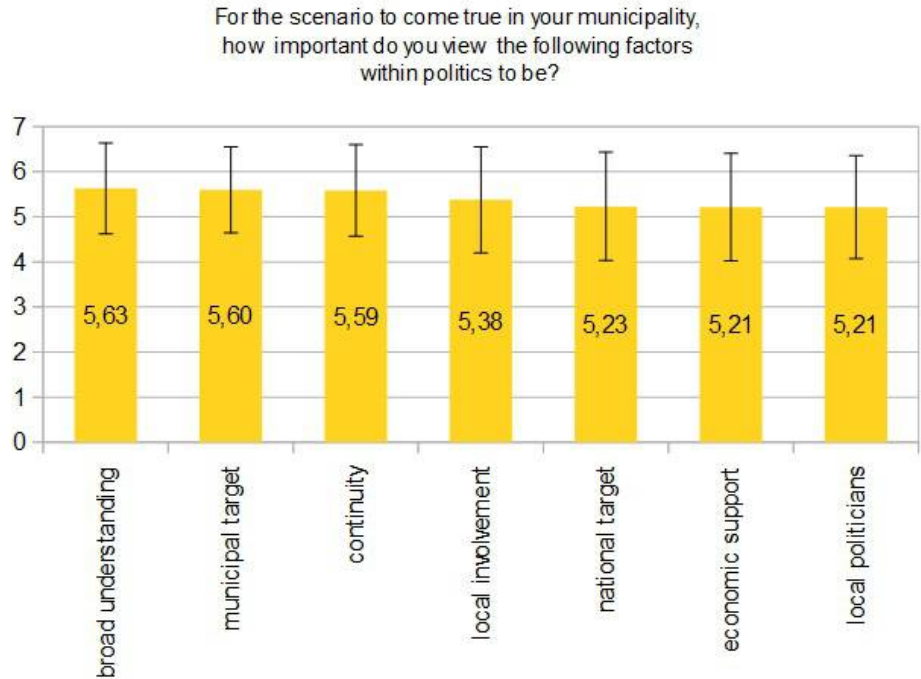


Table 4: The importance of different measures within politics, if the diet scenario is to be fulfilled. Error bars show one standard deviation. Numbers on bars are the mean values. Note: in the online survey program, the number 7 was hidden and had to be reached through a scroll bar. This was discovered once the answers had been collected, and is suspected to have lowered the mean of all alternatives, but not have affected the relationship between alternatives.

- Like within the schools, the measures within **politics** were ranked consistently high in the survey. Some measures concern clear instructions: A national political goal to implement the scenario, having unambiguous and straightforward sustainability goals in local political action plans. Others are of a more practical character, such as continuity in the political support and receiving economic support to educate about and communicate menu changes. And, in addition to that, more knowledge and collaboration type issues were also seen as important: That local politicians have a broad understanding of sustainability, for catering to feel appreciation and support from the local political organisation, and having local politicians act as champions for the cause.

As was mirrored in both the literature and the complementary interviews, unambiguous political goals are important drivers of sustainable change. This does not seem far-fetched considering that change requires a bigger effort (and possibly conflict) than carrying on as usual (Mikkelsen and Sylvest, 2012). Clearer goals means less conflicts and, thus, supposedly an easier path to change. When the survey respondents were being asked what the biggest obstacle is to implementing the diet scenario in each respondent's municipality, a very common view was that there is a lack of interest and knowledge of vegetarian food. Sometimes even a resistance or negativity was brought up, that was said to exist amongst both teachers, pupils, parents and politicians. This obstacle was mentioned more times than practical issues such as time and economic resources, political continuity and sustainable food as a more integrated part of the school curriculum. The knowledge

gap was however sometimes portrayed not only as a problem, but also as an opportunity. The need to build bridges between catering and schools, and initiate better collaborations, was mentioned as something that could potentially give teachers and pupils the knowledge they need to be more appreciative of menu changes. It was also pointed out, both in the survey and in the interviews, that a dietary shift requires a whole new food culture; a focus on schools alone is not enough. Some survey respondents indeed commented that for a change such as this to take place, a national political decision has to be made, and that it has to be acknowledged that food culture moves way beyond the school canteen. Knowledge dispersal is key to acceptance (Filippini et al., 2018), and it can be assumed that this is true on any scale. For Swedish people to consume more legumes and less meat, whether in schools or at home, knowledge needs to be spread in some way or another to raise awareness of both why and how.

It was confirmed that all political measures, found in the literature, were seen as important by dietary managers (table 4). One thing to note, though, is that for the three survey questions asking about the importance of measures within catering, schools and politics, the alternatives within schools and politics were rated more consistently high than the ones within catering. This might be a reflection of the respondents' situation: It is within catering they are used to allocating resources. It is not surprising if they have a clearer view of what they see as more important there than in schools or politics, where they themselves do not have to make the priorities.

5.3 Measuring the green transition

33 respondents (46 per cent) fully, or nearly fully, completed the part of the survey that asked for food purchase data from 2018.

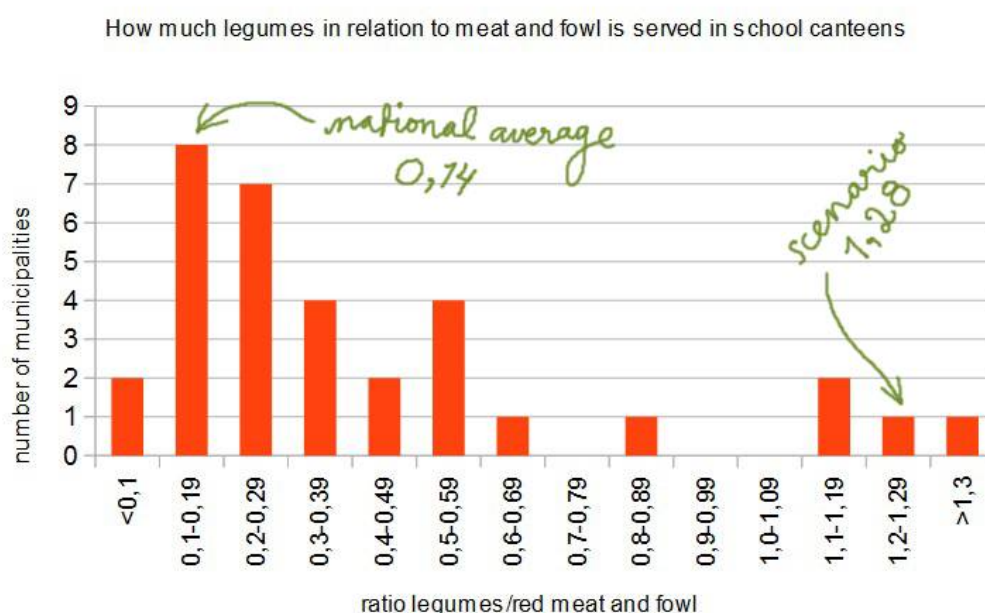


Table 5: The ratio of legumes (kg dried and cooked legumes, legume-based patties and soy mince) to meat (kg beef, pork, chicken and minced beef/pork) in the school canteens of 33 Swedish municipalities.

Survey result

According to the National Food Agency, the current national average consumption is 63 g red meat/person/day, 22 g fowl and 12 g legumes (Amcoff et al., 2012). This gives a legume/meat ratio of 0,14. In the scenario diet, meat would be reduced by 50 per cent to 31,5 g red meat and 11 g

fowl, and legumes would increase by 42,5 g (the "lost" amount of meat) to 54,5 g in total. This new legume/meat ratio would be 1,28. The results from the survey indicate that 91 per cent (30 out of 33) municipalities already serve more legumes in relation to red meat and fowl than the national average diet, but that only one municipality is above the scenario ratio. The distribution of legume/meat ratios in the municipalities is presented in table 5.

In the field for comments on the survey, a common remark was that the survey was time consuming to fill out. Many respondents also found part 2, about food purchase data, difficult to complete. Some, especially respondents from smaller municipalities, commented that their kitchens are not devoted to school catering only, but cook for preschools and elderly care as well, and that this made it difficult to pick out the requested data. Ambiguity in what data was actually requested was also seen as a problem for some, and there were also instances where food was bought from small producers in addition to the main wholesaler, and these purchases were not entered into the statistics program.

From a "less meat, more legumes" point of view, it is positive to see that most municipalities serve more legumes than is consumed by the average Swede, even if the scenario diet is still far away. It would have been interesting to collect data from a few years back, to see what has happened in this field over time.

However, it has become clear that the results yielded from a self-assessment survey like this are not very reliable. When the analysis builds on the results from the different municipalities being comparable, it is important that the instructions are unambiguous and that all participants have access to the same type of data. Today, there are several different food purchase data systems used by municipalities. Even if they all used the same one, it might be time-consuming for the respondents of a survey to collect the data and there is no way to be sure they will all interpret the instructions the same way. It might also not be possible to construct categories of foods that both are easy to access through the computer programs in use, and give a representative image of the green transition. All these issues were brought up by the survey respondents, and make a valid argument against trying to measure the green transition in this way. This goes for using purchase data both to compare municipalities' climate footprint and to determine the ratio of legumes to meat.

Keeping these restrictions and sources of error in mind, one can move on to suggesting possible better ways of tracking the green transition. After all, as has been previously discussed, comparable results, evaluation systems and rankings seem to be a good motivator to get the sustainability work going (e. g. Braun, 2018). This study has shown that a lack of knowledge is responsible for a resistance towards vegetarian school meals. The knowledge on the benefits of greener diets is, however, present with dietary managers, and also with the two interviewed principals. The problem seems to be to make it a priority to convey that knowledge to the ones who lack it, thereby theoretically increasing their interest in change. Considering that measurable goals and clear guidelines were found to be success factors of sustainability projects (Friis, 2015), it might be that the same things - less fuzziness and more measurable facts - is what is needed to motivate politicians to allocate resources to the initiation of such projects. In conclusion, it is a worthwhile task to develop and provide adequate and more holistic indicators of sustainable school meals, that can be used in municipal policy decision making.

Some municipalities already track their own environmental performance over time, calculating for example CO₂-equivalents per kilo food served in their canteens (Ekomatcentrum, 2018; Helsingborgs stad, 2019). Climate footprint is certainly a relevant measure, but it does not say anything about what food is actually served, which is the concern of the present study. It might be that what is already measured - the share of organic food, climate footprint - is better suited to sharp comparison than the green transition is. Maybe there are simpler and more joyful ways to visualise

how much legumes is served in schools, that would be equally applicable to all municipalities whether they have access to their purchasing history or not. And maybe this can be an opportunity to strengthen the connection between catering and schools, as has been called for.

One idea would be to have a survey aimed at the eaters themselves: the schoolchildren. Such a survey could consist of very few questions that together gives a hint about their general appreciation of legume-based food. Questions could include what their five favourite dishes in the canteen are (counting the number of mentions of legume-containing dishes), and how many times the last week they have chosen the vegetarian lunch option. The survey would be anonymous and only collect the name of the school and the municipality, for comparison. Such a survey could be electronic and hopefully easy to handle.

5.4 Summary

In the following, the highlights of the results and discussion will be summarised with the theoretical framework of SST as a basis. An overview of the findings can be found in table 6.

External structures

Starting with external structures, the identified subcategories are i) politics, ii) eaters/voters/structures and iii) catering organisation.

The most prominent insight regarding politics is that there is a wish for unambiguous political instructions, issued nationally and appropriately adapted to local conditions. The instructions can come for example in the form of strategies from the government, or guidelines from relevant national agencies. This would be a good support for the initiation of many kinds of school meal sustainability projects, including serving more legumes and less meat.

In order to serve more vegetarian food in schools, an attitude change must take place that reaches far beyond the school canteen. School meals are not isolated phenomena, they are influenced by many direct and indirect stakeholders such as the voters who decide on what politics should be pursued. Education is needed to the whole society. Changes made to the menus should be anchored with pupils, parents and teachers, and achieving this requires collaboration between the catering organisation and the schools.

Today, in many municipalities such collaboration is perceived as difficult to achieve. A major obstacle seems to be that there is often no clearly allocated responsibility for integrating school meals with the rest of the school's activities. Passionate individual actors can somewhat make up for this organisational or planning related shortcoming. However, for sustainable change such as greener menus to become permanent and successful, the results suggest that the goals and instructions of catering and schools have to be better aligned. If they are, schools can be an important driver of the aforementioned food culture change.

Internal structures

As for internal structures of individual actors, these can be divided into the subcategories i) structure translation and ii) values and experiences. As internal structures could mostly be discerned in the interviews, there was not much possibility to validate those findings against other data sources. One take-home message is however that targets such as climate agreements are often understood as being indisputable. Most of the study participants gave the impression of having good knowledge of the benefits of greener menus, and having an idea of what is needed to implement them. It seems worthwhile, then, to put effort into creating favourable external structures as described, so that these actors can put their knowledge and ideas into action.

	Literature review	Case study	Survey
External structures - Politics	+ <u>Quantifiable targets.</u> <u>Economic compensation.</u> Target multiple issues.	+ <u>National political targets</u> , local political alignment. Citizens' opinions matter. - Economy usually goes first. Collaborations hindered by differing priorities.	+ <u>Economic support helps</u> , as do <u>clear guidelines</u> . - Political ignorance impedes change.
Eaters/voters /setting	+ Role models. Involvement of many interested parties. <u>Knowledge dispersal.</u> - Corporate rule.	+ Focus on school lunches in rankings. - <u>Whole food culture to change.</u> Canteen often too stressful for <u>talking about food.</u> <u>Teachers lack knowledge.</u>	- <u>Society-wide attitude change needed.</u> <u>Education is lacking.</u> Menu changes not appreciated.
Municipal organisation	+ Challenges generate resilience. <u>Champions.</u> - <u>Fuzzy allocation of responsibility.</u>	+ <u>Passionate dietary manager.</u> - <u>Priorities not aligned between catering and schools because of organisational setup.</u> => missing link of responsibility.	- <u>Schools need to change priorities and the way they work.</u> Education needed to catering staff. <u>Cooperation between catering and schools needs to improve.</u> Time resources are lacking.
Internal structures - Structure translation	+ Being sure of procurement possibilities, political targets etc. <u>If targets are clear, it is common to feel a duty to fulfill these.</u>	+ <u>International climate agreements viewed as indisputable targets.</u> National guidelines support for individual actor. Working climate impacted by relation to both politicians and colleagues. Education responsibility is on everyone and especially schools. - Less political engagement => lack of support. Tense relationships => lack of trust, cautiousness. Pedagogical lunches hard to implement, but experiences differ.	+ <u>Almost all respondents felt a moral responsibility to make sustainable change.</u>
Values and experience	+ Inherent belief in the benefits, and correct knowledge to implement the change. Niche knowledge might come in handy.	+ Different values with Swedish produce seen depending on background. Whom responsibility is felt towards differs and influences beliefs. - Bad reception of projects negatively impacts motivation.	

Table 6: Overview of the results of the study: structures influencing the initiation and uptake of sustainability projects within public school catering. External structures are circumstances that are outside of the agent's control, and internal structures relate to how the individual agent perceives her possibilities to act. + = factors that support initiation and uptake of projects. - = commonly perceived challenges. Underscoring = factor highlighted in several parts of the study. The focus of the results are as follows: Literature review - sustainability within industrial catering in general; case study - sustainability within public school catering; survey study - serving more legumes and less meat in Swedish public school catering.

5.5 Agroecological implications of the results

One of the biggest identified issues complicating the green transition is poor knowledge sharing and lack of adequate collaborations. This indicates that a holistically sustainable public food system according to agroecological principles is quite far away in Sweden today. Recalling what was said in section 2.1, such a sustainable system would reestablish a connection between those who grow food and those who eat it. The present study has not evaluated the production systems that would provide public catering with legumes, but can however say a bit about how the eater side of the system affects social and ecological sustainability.

As for the ecological part, the 2019 Lancet report on healthy diets from sustainable food systems (Willett et al., 2019) recommends an even higher ratio of legumes to meat than the "less meat, more

legumes” scenario does in order for human food consumption to stay within the planetary boundaries. It is imperative from an ecological perspective to work towards these dietary scenarios and treat the Earth's resources as finite, as they are. If not, the trends we see of species extinction and a changing climate will continue, leaving all parts of society and not least farming in a very vulnerable position (ibid.). That Swedish dietary managers are aware of the ecological benefits of more plant-based diets is a positive sign from this aspect, and their favourable view on such a dietary transition gives hope that the challenges to get there can be overcome.

As for social sustainability, there are good examples of school lunches being integrated with the school's pedagogical activities. It however still seems many children do not get the opportunity in school to improve their relationship with food production. As the Swedish government has stated in the national food strategy, schools should work towards raising aware consumers (Or food citizens, as Gliessman (2015, p. 321) suggests as a more appropriate concept) who are able to take action for a sustainable future (Prop. 2016/17:104, p. 65). Whatever the government's intentions, knowledge of the food system is what is needed in order to question the status quo of that system and take political agroecological action to change it, as discussed in section 2.1. Knowledge dissemination is however complicated not only by disinterest and ignorance, but also by a shortage of time resources within the schools. Teachers and principals have many tasks to juggle, and their reality has to be taken into account.

Local or Swedish food was also seen as important by the study participants. There are many possible reasons for valuing domestic produce, as shown by the interviews, and depending on which ones of these are the main motivation the procurement goals may differ. If one is in it for the Swedish production standards or transportation distances, produce from other countries might still be able to compete with that of Swedish farmers. If on the other hand support to the local economy, or the cultural and pedagogical value of being able to visit the farmer, is at the heart of it, then the call for tenders might be differently phrased. Then they might actually work as a tool for moving closer to a local food chain, as has been argued by agroecologists to be a vital part of a sustainable food system. This study did not directly address the subject of building local food chains and engaging schoolchildren in them. It can be assumed, though, that since collaboration between the school kitchen and classroom over vegetarian dishes is challenged by a tight schedule, busy canteens, knowledge gaps and disinterest, the same constraints would be a reality also if a local and integrated food chain was pursued. Considering the view that locality should not be a goal in itself, since scale on its own is not a predictor of sustainability (Born and Purcell, 2006), education on food and food systems seems even more vital to enable today's and tomorrow's decision makers to see what benefits can be achieved through the *means* of localised food systems (ibid.).

More than anything, these challenges are proof that agroecology is needed and can offer solutions for furthering the green transition. With its innate holistic view of the food system, and wide knowledge base from all over the world, it can help bringing schoolchildren (and their parents and teachers) and food producers closer together, laying a foundation for a more integrated and possibly more local food system. Two of FAO's ten principles on agroecology are of special value for the public meal: "Culture and food traditions" highlights the role agricultural traditions and crops play in nutritionally and culturally sustainable diets, and "Circular and solidarity economy" concerns how negative externalities in food distribution can be minimised through innovative solutions that reconnect growers and eaters (FAO, 2018). A target of a higher consumption of domestically produced legumes, realised through agroecological means aiming to maximise social and ecological sustainability, would certainly address the challenge that NOrdBrük identified - to regain food sovereignty in Sweden.

6 Conclusions and proposed research

Returning to the objectives posed at the outset of this study, some conclusions can be drawn:

i) explore how different actors view their own responsibilities and mandate regarding changing school catering menus in the direction of having less climate and environmental impact. This with the aim to gain a deeper understanding of how external circumstances and personal values and drivers impact how sustainability goals are worked towards in municipal settings.

The public catering actors that participated in the study saw themselves as having a responsibility to make sustainable change through their professional role, whether that was defined in their job description or not. However, they often felt that they did not have much power to engage teachers and schoolchildren in such projects. Some factors were often present where sustainability projects have been considered in public kitchens: on a political level well-defined targets and guidelines are important, among stakeholders such as schoolchildren and teachers knowledge dispersal is seen as a key issue, and within the municipal organisation champions - resourceful and motivated individual actors - often take charge of the projects. One cross-cutting challenge is that responsibility for initiating sustainability projects often is vaguely defined and that action plans for reaching targets are lacking, leading to feelings of resignation and the projects coming to a stand-still. Considering that many different issues compete for priority and resources within a municipality, it is important that political targets come with thought-through action plans and are appropriately followed up.

ii) assess municipal dietary managers' attitudes towards the "less meat, more legumes" scenario per se, and its possibilities of implementation. Dietary managers are targeted since they presumably are in touch with many levels of the local school catering system. Their knowledge and views can therefore serve as a good starting point of the discussion.

It is a challenging but hopeful picture that has been painted of the opportunities of implementing a "less meat, more legumes" scenario in Swedish schools. On the one hand, the scenario is seen as desirable by most of the dietary managers that chose to reply to the survey, and they seem to assign a high value to both vegetarian meals and Swedish food production. This was also reflected in the case study interviews, where Swedish produce and serving more vegetarian dishes was mentioned in the interviewees' definition of a sustainable school meal in respectively all and four out of five cases. The success factors for sustainability projects within catering found in the literature were confirmed as being relevant in the eyes of municipal dietary managers, which suggests that there exists accessible knowledge, in case a goal was decided on to try to implement the scenario diet in schools.

On the other hand, complicating factors also surfaced in the results of the study. The most prominent one was the general ignorance and disinterest among pupils, teachers, parents and local politicians regarding consuming more legumes. This seems to be due to a lack of educational efforts and collaboration, judging by the comments on the survey and the testimony of one of the case study interviewees, who had experiences of personally reaching out to parents and pupils and through that action improving their acceptance of vegetarian meals. This is in accordance with the literature that emphasises the importance of knowledge and of bringing as many stakeholders as possible along in the decision-making process, which should be considered if municipalities decide on aiming to work towards greener school lunches. It is also worthwhile looking into whether other local sustainability issues - ecological, social or economical - can be addressed at the same time, as this might increase the acceptance and effectiveness of the project.

iii) develop indicators on the green transition in schools and use these to map how much legumes in relation to meat is currently served. This in order to see if this is in line with the national average diet and what is needed to reach the “less meat, more legumes” scenario volumes.

The “less meat, more legumes” report has already shown that a reduction of meat intake in favour of a higher legume consumption will lower the climate and land use impact of farming in Sweden and abroad. To realise the scenario, the public sphere has to do its part. At the moment, the public school kitchens serve more legumes than are on the average Swede's plate, but there is quite a way to go in order to reach the dietary scenario of the aforementioned report. Creating purchase-based indicators of this green transition has been proven challenging, and it would be interesting to instead look into ways of measuring the transition that build on consumption or schoolchildren's appreciation of legume dishes.

From an agroecological viewpoint, much remains to do in order to reach a public school catering system that supports a renewed connection between the eaters at schools and the farmers who produce the food. However, it is positive that the dietary managers in the study were aware of the benefits and challenges of serving more legumes and Swedish produce, and the importance of raising the knowledge level about food. That they called for more collaborations and understanding between kitchens, schools and politicians is also a good sign of the preconditions for making an agroecological transition to a more sustainable school food system. Future research might want to put focus on other issues within public catering that are relevant from an agroecological perspective, such as innovative value chains that aim to make ecologically sustainable farming economically viable or how to teach schoolchildren about food systems. It might also be valuable to further study the opportunities and challenges of the green transition, but focusing on the view of other stakeholders than dietary managers.

7 Methodological discussion

In the following, a discussion will be held on the setup of the study, how the data was analysed, and how well the chosen theoretical framework served the purpose of the study.

7.1 Design of the study

One main lesson learned during the work with this thesis is that survey creation is tricky. The survey used here was tried on two dietary managers in order to assess its user friendliness and time consumption, but when going through the final responses a very common phenomenon was that the respondent had made routine replies to multiple choice questions (e. g. choosing 7 - “very important” - for a whole set of statements when asked to rate the importance of each), and more so towards the end of the survey than in the beginning. This of course affects the results of the study, making it less nuanced than it could have been, although the assumption still is that the respondents were truthful and that their answers are representative of their general opinion. A minor technical problem in the survey program was detected after the answers had been collected. At the question about measures within politics (table 4), the option of rating the measures with a 7 was hidden and could only be reached by using a scroll bar. This is assumed to have lowered the average ratings of these measures, but not to have affected their ranking relative to each other.

When the survey responses were collected, it became apparent that the data gained from it would not be of much help in meeting the aim of exploring actors' driving forces and perceived action space in sustainable school meals. The survey was designed with the idea that some questions would target the respondent's values, and corresponding questions would show what the respondent had actually done or perceived herself to be capable of doing. This was meant to be a base for a

discussion on whether dietary managers were generally able to put their ideas and values into action, and thereby seeing what role they can be assumed to play in the green transition. However, the survey was mostly comprised of multiple choice questions, to make it less time consuming and more feasible to fill in. This led to the generated data being far from detailed enough to be of use in determining the respondents' perception of their own role in the catering organisation (and their professional role's possibilities of societal impact at large), and a dilemma was discerned: either the aims of the study had to be modified to suit the new conditions, or additional data had to be gathered. As it was seen as relevant to gain an understanding of how the interplay between different actors in the municipal organisation affects the work towards sustainable school meals, it was decided that it would be worthwhile to conduct a few interviews that would go more in-depth on this subject.

It was understood from the start of the interview planning that time resources were too scarce to cover more than one municipality, or even give a very nuanced image of the one chosen case, but it would still serve as a complement to the survey and act as triangulation of the results. It would be interesting if a future comparative case study had a closer look at the factors determining why some municipalities are more engaged in sustainable school meals than others. The results from the present study show that there is a substantial difference in how different actors perceive the possibilities of sustainable change in their organisation. It would be valuable to see to what extent this perception is built on permanent factors such as personality and values of the people in positions of power, and how much can be influenced by a favourable environment. That the sustainability potential of public catering should be harnessed was emphasised by the Swedish government in their proposal for a food production and consumption strategy (Prop. 2016/17:104, p.68), making research concerning this valuable.

Practical constraints led to only two interviews being conducted face-to-face. The phone interviews were all shorter and less detailed than the face-to-face ones, even though the questions were about the same in all interviews. This might be partly because of the interview format, but also partly because the interviewees had different professional relationships to school meals and thereby differing amounts of opinions on the subject.

7.2 Data analysis

In the end, only a portion of the survey data was included in the discussion, and not much statistical analysis was carried out. At the outset of the study, it was expected to turn out more quantitative than it did, but as the limitations of the survey were discovered along the way the study acquired more and more of a qualitative nature. Any correlation analyses that could have been carried out between a municipality's legume/meat score and its previous work on sustainability, for example, would have been highly approximate since the purchasing volumes were not reliable enough. Furthermore, for the survey results in general, it was seen as enough to confirm whether the literature findings were applicable to Swedish circumstances or not, and conducting statistical analyses to distinguish between how dietary managers rated different measures was not seen as relevant. As the conceptual map of structures within municipal organisations show, there are many factors at play, and without the opportunity to understand cause-and-effect relationships between these the risk is that false assumptions are made.

7.3 Choice of theoretical framework

After having analysed the survey responses with strong structuration theory in mind, it does indeed seem like this framework offers valuable interpretative opportunities in the field of public catering. The data collection method, however, could have been designed differently to better provide a starting point for the discussion. If in-depth interviews or case studies had been conducted in

several municipalities, especially over time, SST would have been useful for seeing why their translations of national guidelines and targets differ, since it helps separate individual actors' contribution from the bigger structures. In the present study, it might have been enough to build a conceptual map of a municipality without using SST, and code the interviews with the help of that and the literature review findings - but it is hard to know whether that would have been true even if SST had not been considered from the beginning, as all learning during the writing process affects the way one sees the world (changes one's internal structures, put in SST words). It can still be concluded that the theoretical framework did serve its purpose, as it offered an adequate way of making sense of the empirical data.

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Appendices

A. Main findings of literature review

Factor	Mentions	Main findings
Wider (political) strategies	(Filippini et al., 2018; Galli et al., 2014; Grivins et al., 2018; Mikkola, 2009; Morgan, 2008; Smith et al., 2016; Sonnino, 2009)	Initial adoption of organic more likely when locality of food is also considered (Filippini). Menu changes supported through education (Galli). Initially separate projects in school turned out to be complementary (Grivins). Selling off leftover school lunches targets both food waste and food insecurity (ibid.). Purchases of local and organic initiative partly to strengthen local economy (Mikkola). Whole school approach to meals in action plan commissioned by parliament (Morgan). Diverse criteria (e.g. environmental and social) employed in all sustainable procurement cases in study (Smith et al.). Ways of going circular in Rome: leftover food to charities and waste from plates to animal shelters, tendering criteria that target humanitarian initiatives such as employing former criminals (Sonnino).
Explicit criteria	(Braun et al., 2018; Mikkola, 2009; Morgan, 2008; Smith et al., 2016; Sonnino, 2009; Stahlbrand, 2016)	Procurers had troubles considering sustainability in purchases, due to insufficient knowledge on how to measure environmental impact of food (Mikkola). Lack of knowledge of possibilities in procurement leads to cautiousness and lost opportunities (Morgan). Clearer distinction between green and sustainable public procurement would further sustainable transition (Smith et al.). Contracts won not only on lowest cost - socioenvironmental externalities made visible in tendering criteria (Sonnino). Existing standards (for traceability and sustainability) enabled catering transition scheme to work out (Stahlbrand). Caterers view Berlin's tendering criteria as a driving force behind the transition to organic, but the focus on only organic also provides no incentive for strengthening local value chains (Braun).
Multiple level engagement	(Galli et al., 2014; Grivins et al., 2018; Mikkola, 2009; Morgan, 2008; Smith et al., 2016; Stahlbrand, 2016)	Canteen committee comprised of parents, experts, catering firm and municipal representatives (Galli). Parents' vision of organic vegetarian lunches enabled by committed chef (Grivins). Cooperation with industry reduced packaging waste (Mikkola). NGO:s play important role in pushing sustainable catering in UK (Morgan). Engaged actors in both politics and catering

Factor	Mentions	Main findings
		important for enabling change (Smith et al.). Caterer working with suppliers to develop their sourcing range (Stahlbrand).
Champions	(Filippini et al., 2018; Galli et al., 2014; Grivins et al., 2018; Morgan, 2008; Stahlbrand, 2016)	Canteen committees (engaged parents) push both inclusion and diversification of organic (Filippini, Galli). Parents who started a school investing own time in kitchen, and even in legal cases, to enable quality meals (Grivins). Senior officers and politicians defended high quality-high cost school meals, crucial to keeping them (Morgan). Concludes that the head chef must be in on sustainable changes if they are to work out (Stahlbrand).
Local adaptation	(Galli et al., 2014; Grivins et al., 2018; Smith et al., 2016)	Short food chains project shows shift of focus from economy to education (Galli). Food waste setup was not transferable from schools to elderly care (Grivins). Local takes on national legislation, e.g. broader definitions of sustainability or more inclusive collaborations, are drivers of sustainable procurement (Smith et al.).
Openminded cultural context	(Grivins et al., 2018; Smith et al., 2016; Stahlbrand, 2016)	Closemindedness a problem when legal case filed against vegetarian menu (Grivins). National law in Italy creates favourable climate for organic procurement (Smith et al.). Student (university) movement for environment has both been pushing sustainable change and enabling it (Stahlbrand).
Economic compensations	(Galli et al., 2014; Sonnino, 2009; Stahlbrand, 2016)	Regional authorities covering price differences for organic and traditional food (Galli). Caterers paid more per meal by the city to allow for continued high quality, but conditioned with "further innovations" such as regular ethnic dishes (Sonnino). University allocated more money to catering to enable meeting canteen sustainability certification criteria (Stahlbrand).
Pedagogic importance	(Filippini et al., 2018; Galli et al., 2014; Stahlbrand, 2016)	Education to parents (as well as children) makes them accept higher cost of organic (Filippini). Educational lunch legitimises more diverse eating and thus diverse procurement too (Galli). Staff needs to be educated in order to pass knowledge on to students (Stahlbrand).
Evaluation systems	(Galli et al., 2014; Sonnino, 2009)	Ongoing communication through canteen committee facilitates consensus (Galli). Concept of catering quality in constant reevaluation to avoid stagnation; children's opinions on food taken into account (Sonnino).
Understanding of	(Galli et al., 2014;	Food chain gradually shortened over 5 years

Factor	Mentions	Main findings
time perspective	Sonnino, 2009)	(Galli). Contracts lengthened to 5 years to enable caterers and producers to adjust to demand (Sonnino).
Role models	(Grivins et al., 2018; Morgan, 2008)	Food waste setup spread to other regions (Grivins). Scottish school meal reform spread within the UK (Morgan).
Expert consultation	(Sonnino, 2009; Stahlbrand, 2016)	Experts on organic certification and nutrition consulted to determine what organic foods should be prioritised in call for tender (Sonnino). Consultation offered to suppliers within sustainability certification scheme, in order for them to make the most of the opportunity (Stahlbrand).

B. Summary of the "less meat, more legumes" scenario

sammanfattning av Linnéa Stolt

Less meat, more legumes: prospects and challenges in the transition toward sustainable diets in Sweden

Elin Rööf, Georg Carlsson, Ferawati Ferawati, Mohammed Hefni, Andreas Stephan, Pernilla Tidåker & Cornelia Witthöft

Den här rapporten publicerades 2018 och utforskar vilken roll baljväxter kan spela i övergången till ett matsystem som är mer hälsosamt, miljövänligt och resurseffektivt.

VARFÖR?

Växande befolkning kräver nya dieter. Matsäkerhet kan inte uppnås enbart genom produktionsökning, och minskad köttkonsumtion är viktigt ur ett klimatperspektiv. Globalt kommer 5 % av proteinet i mänskliga dieter från baljväxter, i Sverige är det bara 1 %!

gråärt

HUR?

Dietscenario där Sverige äter 50 % mindre kött än idag, och istället lägger till en portion (55 g) svenskodlade baljväxter om dagen. Då skulle vår köttkonsumtion bli lika stor som det globala medeltalet, och vårt protein- och energiintag skulle ligga inom Livsmedelsverkets näringsrekommendationer.

Rapporten visar vad ett sådant scenario skulle ha för inverkan på näringsintag, jordbruk och klimat.

svart bön

RESULTAT

näringsintag

Scenariodieten skulle öka intaget av fiber och folat, så att det nästan möter näringsrekommendationerna. Fettintaget skulle minska, och bestå till större del av omättade fettsyror än idag. Zink, järn och B12 hålls inom rekommendationerna. Intaget av selen, som redan är lågt, minskar. Resultatet är beroende av vilken typ av kött som utesluts. Rekommendationen är att minska konsumtionen av processade köttprodukter som generellt är mindre hälsosamma.

jordbruk

Baljväxtodlingen skulle behöva öka, men samtidigt skulle foderodlingen för gris- och kycklinguppfödning minska så i slutänden tas i Sverige 21 500 hektar mindre i anspråk än idag. Den marken kan användas för andra grödor, eller för naturvård. En utmaning är att odlingsteknik och maskiner inte är så utvecklade än för några av de baljväxter som scenariot förespråkar, som gråärter och linser.

klimat och miljö

Scenariot skulle minska genomsnittssvenskens klimatavtryck från mat med 20 %, till 1,5 CO₂-ekvivalenter per år, och minska markåtgången med 23 % till 0,26 hektar per person. Kväveläckage, som leder till övergödning, skulle minskas på två sätt: dels skulle kvävegödslingen på åkrarna minska, och dels skulle den förändrade dieten, med lägre proteinintag, leda till att mindre kväve passerar från reningsverken till vattendrag.

Om scenariodieten kombineras med Jordbruksverkets uppskattning av möjlig produktions-effektivisering skulle Sveriges mat-klimatavtryck kunna sänkas med 50 %!

gul ärt

C. The survey

Bakgrundsfrågor

Vilken kommun arbetar du i?

*Svar: ____

Vad har du för utbildning?

*Svar: ____

Varför valde du att söka dig till kostchefsyrket?

*Svar: ____

Hur många år har du innehaft din nuvarande position?

*1

*2

*3

*4

*5

*>5

Hur sköts kommunens livsmedelsupphandling?

*I egen regi

*I samarbete med 1-3 närliggande kommuner

*I samarbete med fler än 3 närliggande kommuner

*På annat sätt: ____

Del 1.1 Ansvar och handlingsrum rörande skolköksmenyernas hållbarhet

Ekologisk hållbarhet är ett komplext mål som måste arbetas mot på många fronter. Den här enkäten fokuserar enbart på vad som serveras i skolrestaurangerna, det vill säga menyernas klimat- och miljöpåverkan i sig och inte åtgärder mot exempelvis tallrikssvinn.

Med klimatpåverkan menas matens upphov till växthusgasutsläpp. Med miljöpåverkan menas matens upphov till utsläpp av miljöskadliga ämnen, bidrag till övergödning av sjöar och vattendrag och negativ påverkan på växt- och djurliv. Med hållbarhet menas, om inget annat specificeras, ekologisk hållbarhet.

Har den kommunala skolmenyn, under din tid som kostchef, avsiktligt förändrats till att ha mindre klimat- och miljöpåverkan?

*Ja

*Nej

Om ja, varifrån i er kommunorganisation kom initiativet till förändringen? Flera svar kan markeras.

*Den pedagogiska verksamheten (lärare, elever)

*Köken (kockar, måltidsbiträden, kökschefer)

*Organisation måltid (kostchefs kollegor, annan administrativ personal)

*Politiker

*Annat: ____

Vilken typ av förändring rör(de) det sig om? Flera svar kan markeras.

*Ökad andel miljömärkta livsmedel

*Inköp av livsmedel med mindre antibiotikaanvändning i produktionen (välja bort vissa produktionsländer etc)

*Minskande av livsmedel med hög klimatpåverkan (t ex nötkött)

*Ökad andel vegetabilier

*Minskade transportutsläpp (samdistributionscentraler, lokalt producerade livsmedel etc)

*Övrigt: ____

Genomfördes förändringen/arna inom ramen för befintlig budget eller med hjälp av ett budgettillskott?

- *Inom befintlig budget
- *Med budgettillskott

Har du enligt din arbetsbeskrivning eller kommunala styrdokument ett ansvar att arbeta för att förändra skolköksmenyerna mot att ha mindre klimat- och miljöpåverkan?

- *Ja
- *Nej

Anser du att du har ett moraliskt ansvar att arbeta för att förändra skolköksmenyerna mot att ha mindre klimat- och miljöpåverkan?

- *Ja
- *Nej

Del 1.2 Dietscenariot och dess möjlighet att implementeras i kommunala skolkök

Den gröna omställningen innebär att animaliska proteinkällor byts ut mot vegetabiliska. Hur viktiga ser du att de olika hållbarhetsvinsterna med det är? Bedöm varje alternativ från 1-7, där 1 = inte viktigt och 7 = mycket viktigt.

- *klimat och miljö
- *mänsklig hälsa
- *djurvälstånd
- *Kulturella aspekter (mindre behov av specialkost av etiska och religiösa skäl, bevara mattraditioner från olika kulturer)
- *Möjligheter att stötta svenskt jordbruk (omprioritering av ekonomiska medel och kunna köpa in svenska råvaror som ev. är dyrare)

Det finns många fronter att bedriva hållbarhetsarbete på inom matkonsumtion. Hur viktiga ser du att följande åtgärder inom de offentliga måltiderna i din kommun är för att nå ekologisk hållbarhet? Skala 1-7

- *Minska matsvinnet (tillagning + tallrik)
- *Minska transporternas miljöpåverkan (mer närproducerat, bättre transportmedel, samdistributionscentraler)
- *Minska förpackningarnas miljöpåverkan (förpackningsdesign, mer återvinning)
- *Öka andelen ekologiska livsmedel
- *Öka andelen svenska livsmedel
- *Öka andelen vegetabilier i menyerna

I e-postbilagan "sammanfattning av dietscenario-rapport" beskrivs ett scenario där Sveriges totala konsumtion av kött minskar med hälften, och konsumtionen av svenskodlade baljväxter ökar. Hur önskvärt anser du det scenariot vara? Skala 1-7, där 1 = inte önskvärt och 7 = mycket önskvärt

*Svar: ____

För att scenariot ska kunna uppfyllas i din kommun, hur viktiga anser du att följande politiska åtgärder skulle vara?

- *En nationell politisk målsättning att uppfylla scenariot
- *Tydliga kommunpolitiska målsättningar och handlingsplaner, med hållbarhetsmål som är otvetydiga
- *Kontinuitet i den politiska viljan (att scenarioarbetet är prioriterat och inte står och faller med t ex ekonomiska omprioriteringar eller ändrat kommunstyre)
- *Extra ekonomiska medel till utbildning, information mm
- *Lokalpolitiker som är involverade i arbetet mot att uppfylla scenariot (t ex som representanter/informationsspridare)
- *Tydligt engagemang från kommunens och lokalpolitikernas sida (t ex att måltidsverksamheten lyfts fram på kommunhemsidan, goda exempel uppmärksammas)
- *Att lokalpolitikerna har en bred förståelse av hållbarhetsfrågan (utöver att förespråka lokalt och ekologiskt)

För att scenariot ska kunna uppfyllas i din kommun, hur viktiga anser du att följande faktorer inom din organisation (kostenheten) skulle vara? Bedöm varje alternativ från 1-7, där 1 = inte viktigt och 7 = mycket viktigt.

- *Kunskap om att ställa effektiva upphandlingskrav
- *Projektledare som kan se till att kunskaper och information sprids i organisationen och att arbetet följs upp

- *Anpassad köksutrustning (t ex för att koka baljväxter)
- *Att kökspersonalen har bra utbildning för att hantera menyförändringarna
- *Samarbeten och kunskapsdelning med andra kommuner som har samma mål
- *Att du själv har aktuell kunskap och kan agera expert/ge råd till polikerna
- *En stark lagkänsla där alla i organisationen känner sig involverade i förändringsarbetet och står bakom målen
- *Att det finns bra verktyg för att utvärdera och kommunicera menyförändringsarbetet

För att scenariot ska kunna uppfyllas i din kommun, hur viktiga anser du att följande faktorer inom skolan skulle vara? Skala 1-7

- *Förståelse/vilja att låta nya maträtter testas över en längre period (att pedagogerna inte genast dömer ut en maträtt som som inte uppskattas första gången den serveras)
- *Acceptans för hållbarhetsarbetet hos pedagogerna, exempelvis genom utbildningar och workshops
- *Folkbildande insatser för att eleverna ska ha bättre och mer varierade matvanor med sig hemifrån
- *Att lunchen är schemalagd och skild från rasten så att dess sociala och pedagogiska potential kan utnyttjas
- *Ett forum där föräldrar, lärare, kostexperter och personal från måltidsorganisationen kan mötas och diskutera skolmåltiderna
- *Ett fördelaktigt klimat i matsalen (kunniga och positiva pedagoger, bra presentation av maten etc)
- *Att mat och jordbruk är mer integrerat i den pedagogiska verksamheten även utanför matsalen

Vad ser du som det största hindret för att scenariot ska uppfyllas i din kommun?

*Svar: ____

Del 2 Att mäta den gröna omställningen

Idag saknas statistik över vad som faktiskt serveras i skolorna i Sverige. Genom den här delen av enkäten kommer jag kunna se ifall den kommunala skolmåltidsverksamheten är längre ifrån eller närmre dietscenariot än den genomsnittliga svenska livsmedelskonsumtionen. Jag kommer räkna på både koldioxidekvivalenter/kg livsmedel, och andel baljväxter/animalier.

Hur många elever har de kommunala grund- och gymnasieskolorna i din kommun?

*Svar: ____

Hur många kilo av följande livsmedel köptes in till grundskole- och gymnasieverksamhetens kök i din kommun år 2018:

- *Torkade baljväxter
- *Kokta baljväxter
- *Baljväxtbaserade biffar (även falafel)
- *Baljväxtbaserad färs (OBS ej Quorn)
- *Obearbetat nötkött
- *Obearbetat fläskkött
- *Obearbetat kycklingkött
- *Obearbetad fisk
- *Köttfärs (nöt- och blandfärs)

Stort tack för din medverkan!

Har du några kommentarer på enkäten får du gärna ge dem här nedan. Ha ett bra terminsslut och en fantastisk sommar! /Linnéa Stolt

Kommentarer: Berätta gärna ifall du tycker enkäten var enkel eller opraktisk, snabb eller tidskrävande att fylla i. Om du har åsikter eller förslag om del 2, att mäta den gröna omställningen, så är dessa extra välkomna!

*Svar: ____

E-postadress: Ange din e-postadress om du vill att jag ska skicka över min rapport när svaren är sammanställda! Jag kommer inte skicka ut någonting annat, och inte heller spara adressen när jag är klar med mitt arbete.

*Svar: ____

D. Interview guide

These questions were used as guidelines for the complementary interviews with two dietary managers, one school principal and one school canteen chef in Burlöv. A chosen range of the questions were used for each interview, depending on the relevance of them in each interviewee's professional role.

What is your definition of a sustainable school meal? Why do you prioritise the way you do?

According to you, are the school lunches in your municipality sustainable? More so than in other municipalities? How?

Do you have possibilities to make sustainable change? How? Why/why not? Do you feel responsible to make sustainable change?

Is it easy/rewarding or difficult to work towards sustainable changes in your municipality? Why/why not? Are some kinds of changes easier to implement than others?

Has the climate within the school catering organisation in your municipality changed over time to become more or less open to sustainable change? If so, why do you think that is the case?

To what extent are you in touch with the school catering organisation?

Have the lunches and/or the canteen environment at your school changed in some way during your time in office? How, why? Who initiated the change?

Is there any special reason you chose to work with school lunches?